From: "Horowitz, Noah" <nhorowitz@nrdc.org>
To: <hsingh@energy.state.ca.us>
CC: <jwilson@energy.state.ca.us>, "Tim Tutt" <Ttutt@energy.state.ca.us>, <Bp...
Date: 1/30/2008 1:22 PM
Subject: docket number 07-AAER-3 - NRDC Game ConsoleTemplate for Title 20
Attachments: NRDC Final Game Console Proposed Standard Jan 30 2008.pdf

Dear Harinder,

Enclosed is a completed template from NRDC for game consoles. We are recommending the CEC establish standards under Title 20 for new game consoles. The standard is intended to dramatically reduce the amount of power these devices use during periods of extended user inactivity.

DOCKET
07-AAER-3
DATE JAN 30 2008
RECD. JAN 30 2008

Please let me know if you want to discuss this further or have any questions.

Regards,

Noah

Noah Horowitz

Sr. Scientist

Natural Resources Defense Council

111 Sutter Street, 20th Floor

San Francisco, CA 94104

415-875-6100

nhorowitz@nrdc.org

PRIVILEGE AND CONFIDENTIALITY NOTICE
This message is intended only for the use of the individual or entity to which it is addressed and may contain information that is privileged, confidential and exempt from disclosure under applicable law as attorney client and work-product confidential or otherwise confidential communications. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication or other use of a transmission received in error is strictly prohibited. If you have received this transmission in error, immediately notify us at the above telephone number.

Proposal Information Template – Game Consoles

2008 Appliance Efficiency Standards

Noah Horowitz – Natural Resources Defense Council (NRDC)
nhorowitz@nrdc.org
415-875-6100
January 30, 2008

CONTENTS

Purpose

This document is a report template to be used by researchers who are evaluating proposed changes to the California Energy Commission's (Commission) appliance efficiency regulations (Title 20, Cal. Code Regs,, §§ 1601 – 1608) This report specifically covers Game Consoles.

Background

Game consoles – Hi end game consoles such as the Sony Play Station 3 and Microsoft Xbox 360 use as much or more power in on mode than many desktop computers. Unfortunately many of these boxes are not turned off when the user is no longer playing the game. This is because the user forgets to turn off the game console when they turn off the TV it is connected to and/or they deliberately choose not to turn off the game console because they will lose their place in the game. Note, today's game consoles are unable to save the game. As a result many current game consoles may use up to 1,000 kWh/yr more than necessary. This is equivalent to the annual energy consumption of two new refrigerators.

The purpose of this proposal is to automatically place game consoles into a low power standby mode after extended periods of user inactivity.

Overview

Description of Standards Proposal	Game consoles are connected to TVs and in many cases contain high speed computing and video capabilities. The standard would require an auto power down feature and establish a maximum allowable standby power level.

California Stock and Sales	Game consoles have a roughly 5 year life cycle. Next generation game consoles are in their early development stages by the console makers Microsoft, Sony and Nintendo. A primary goal of this standard is to ensure new game consoles have an auto power down feature incorporated into their designs and that the new systems (including the new games) have the ability to save the game when the box goes into standby mode. According to data from the NPD Group published in gamesultra.com (2008) and a 2007 Consumer Electronics Association study, there are approximately 50 to 60 million installed game consoles nationally. Assuming 12% of those are found in California based on our population, this translates to 6 to 7.2 million game consoles. In 2007, approximately 6.6 million Sony Playstation 2 and 3, 4.6 million Microsoft Xbox 360, and 6.3 million Nintentdo Wii were sold nationwide. This is an extremely competitive industry and the % market share owned by each company can vary greatly based on who has the newest machine on the market, what its features are, and the games that have been introduced for that platform. Again, at the high level, one can assume 2007 CA sales of game consoles at just over 2 million units per year.
Energy Savings and Demand Reduction	For the two biggest energy consuming models on the market today – the Play Station 3 and X Box 360 – one can assume a per model annual energy savings of approximately 500 to 1,000 kWh/yr depending on the hours the console is used and the idle mode power consumption. To keep this at a high level and if one assumes annual savings of 700 kWh/yr for the Sony and Microsoft products for Tier 2 of the proposed standard, the statewide first-year impacts are between 230 and 680 GWh/yr depending on existing usage patterns. The five-year impacts are between 1150 and 3400 GWh/yr.
Economic Analysis	The cost of this change should be very minor provided the game console manufacturers incorporate the auto power down capability into their new game console designs. This will be an extremely cost effective measure.

Non-Energy Benefits	Pending confirmation from the manufacturers, having an unattended game console shift to standby mode might possibly extend the products lifetime and also reduce manufacturer warranty costs.
Environmental Impacts	None that we are aware of.
Acceptance Issues	Some consumer education will be needed to explain the auto off feature.
AB 1109 (California Lighting Efficiency and Toxics Reduction Act) [if applicable]	Not Applicable
Federal Preemption or other Regulatory or Legislative Considerations	Game consoles are not a federally regulated product. EPA ENERGY STAR is considering establishing a voluntary specification for this product category.

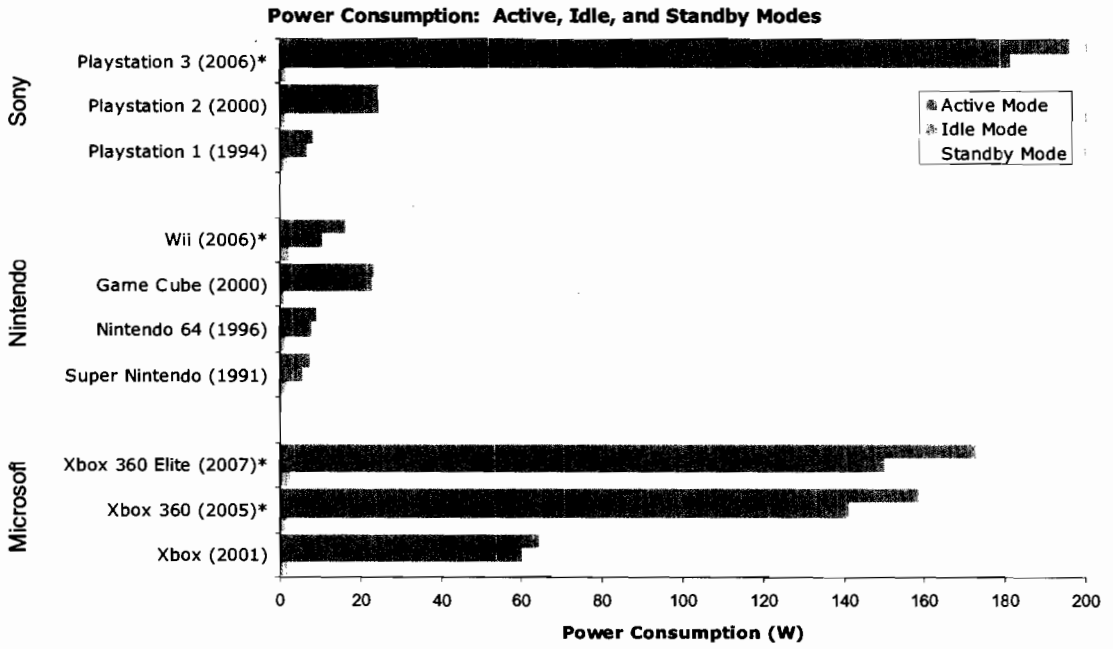
Methodology

NRDC and its consultant Ecos Consulting measured the energy use of game consoles located in people's homes in 2006 and 2007. We used a power meter to measure the power use of the game consoles in various operating modes – on (the game is loaded and being played), idle (game is inserted but not being actively played) and standby/off (box is turned off but still plugged in).

While no measured data exists on the percent of consoles that are left on when the user is no longer playing the game or watching a DVD, anecdotal evidence suggests many users do. While we hope to obtain further user behavior data, this data hole by no means affects the viability of this standard. Additional data will simply show whether the percent of consoles left on is 25% or 75%. In either case, the standard will be extremely impactful and cost effective. The only difference will be the total statewide savings that will be achieved.

Analysis and Results

See graph below which shows that: a) each generation of game consoles uses more power than previous generations, and b) these boxes are already able to draw very low levels of standby power (when they get there), around 1W.



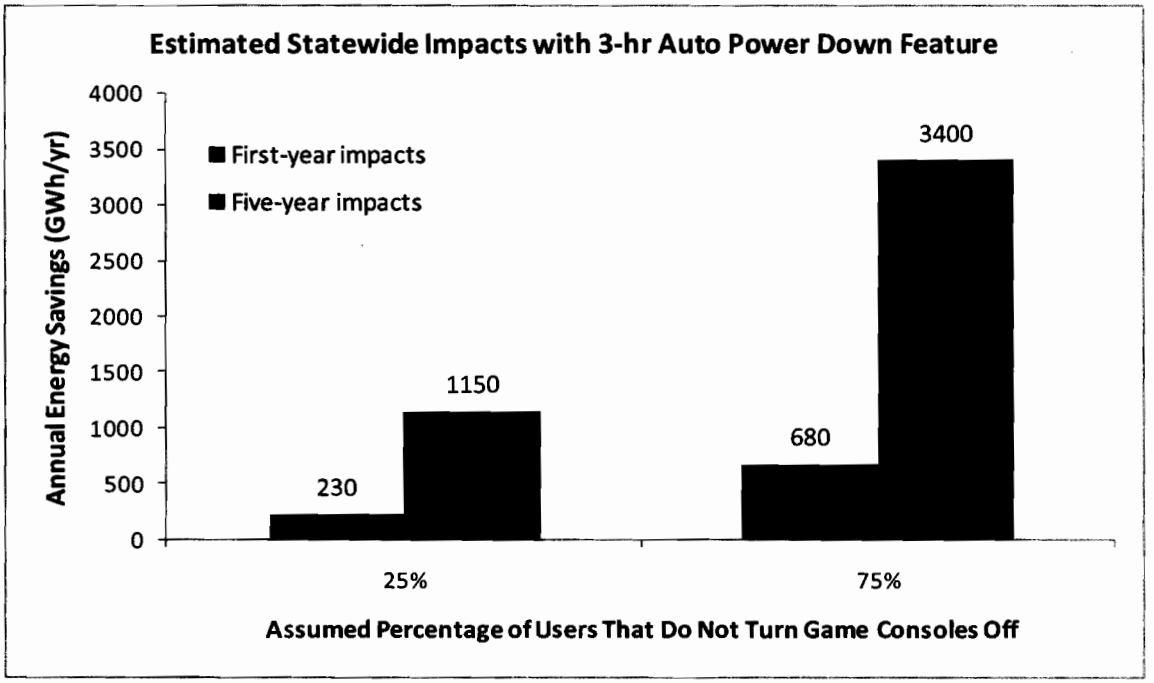
It should be noted that since NRDC performed this initial research in 2007, we have learned that both Sony and Microsoft have made significant improvements to their on and idle mode power levels. Both company's latest models now appear to use around 120W, down from previous levels of 150 to 200W when on. We have also since learned that in this industry, the game console makers frequently make incremental improvements to their product. These changes are typically invisible to the consumer as the product will continue to be marketed as the current generation console (e.g., Play Station 3 or Xbox 360). Since the Nintendo Wii uses much lower power levels, < 20W when on, the savings opportunity for this device from auto power down is much lower.

To develop an order of magnitude estimate of annual energy savings for the Sony and Microsoft products, we assumed a total annual sales of 1.3 million boxes, a power differential of 100W between idle and standby, and a user profile of 2 hour/day game console use, 3 hours idle, and 19 hours standby (Note Microsoft's Xbox 360 already includes an auto power down feature but it is shipped DISABLED and it is unlikely that many users take the effort to find this feature and turn it on.)

This translates to a per box savings of 700 kWh/yr.[1] The figure below illustrates that an auto power down feature will have significant statewide energy impacts. First-year and five-year impacts are shown for two existing usage scenarios: 1) 25% of users leave their console in idle mode when not playing and 2) 75% of users. It is likely that actual usage pattern fall with these high and low estimates and therefore first-year statewide energy savings would be

[1] This is the estimated savings for a user that leaves the game console in idle mode when not playing. It's assumed that 19 of the 22 hrs/day spent in idle mode are shifted to standby mode with a 3-hr auto power down requirement.

between 230 and 680 GWh/yr. After five years, savings would be between 1150 and 3400 GWh/yr.



Recommendations

There is currently no language in the Title 20 standard pertaining to game consoles.

In developing our recommendation for a standard, we deliberately chose to only focus on reducing the amount of energy the device consumes when it is not being used for extended periods of time. As such, we elected NOT to include "on mode" power limits. This decision was deliberate as we wanted to provide maximum flexibility to game console and game designers to add new capabilities, etc, and because the big energy savings opportunity is to get these boxes to move from the current 100 – 150 W used in idle mode (which can be up to 22 hours per day) down to <5 W when in standby.

The dates shown below are intended to capture the holiday selling season, when a large percent of annual sales occur.

Tier 1 – effective date 9/1/2010.

1. Game consoles shall be equipped with an auto power down feature that will automatically place the console into standby mode after 3 hours of user inactivity provided:

   - There is no DVD or game inserted in the device; or
   - The movie or game is over.

2. The auto power down feature shall be enabled at the factory and not require the user to "opt in" for this feature to work.

3. Standby power shall be no more than X watts. (this will likely be somewhere between 1 and 5 watts pending further discussion with the industry)

Tier 1 will require console makers and game industry to include the capability of determining and communicating to the game console when the game is over, or when no game or DVD is loaded.

Tier 2 – effective date 9/1/2012

1. Game consoles shall be equipped with an auto power down feature that will automatically go into effect after 3 hours of user inactivity.

2. The auto power down feature shall be enabled at the factory and may not be disabled on a long term basis.

3. Standby power shall be no more than X watts. (this will likely be somewhere between 1 and 5 watts pending further discussion with the industry)

Tier 2 will require additional system design changes and coordination with the game makers to ensure games can be saved for future use before the box goes into standby mode.

We encourage the CEC to facilitate follow-up discussions with the industry to determine if an alternate number of hours of user inactivity should be used for this standard, perhaps as low as 1 hour, what the standby power level should be, and to refine as appropriate the proposed standard language.

Acknowledgement: NRDC acknowledges the assistance provided by Iex Chase at Energy Solutions who reviewed this document and helped develop the savings estimates. Energy Solutions' work was supported by PGE's Codes and Standards program.

References

DX Gaming. 2006. "Game Console Energy Consumption". http://www.dxgaming.com/2006/06/17/game-console-energy-consumption/. June 17.

Gamesutra.com. 2008. "NPD: 2007 U.S. Game Industry Growth Up 43% To $17.9 Billon". Website references data originally reported by the NPD Group. http://www.gamasutra.com/php-bin/news_index.php?story=17006. January 18.

Roth R. & K. McKenney. 2007. Energy Consumption by Consumer Electronics in U.S. Residences. Prepared by TIAX LLC. Commissioned by the Consumer Electronics Association (CEA). January.